

Serial No. 09/963,280

Atty. Doc. No. 00P7908US01

Amendments To The Claims:

Please amend the claims as shown. Applicant reserves the right to pursue any canceled claims at a later date.

1. (currently amended) A resonator for damping pressure waves supported by acoustic energy in a system having a flow path, the resonator comprising:
  - a) a first member;
  - b) a first plurality of openings through the first member;
  - c) a second member maintained in a generally spaced relation to the first member wherein a volume is defined between the first member and the second member and the first member is situated upstream of the second member within the flow path;
  - d) a second plurality of openings through the second member, the first plurality and the second plurality of openings being in fluid communication with the flow path so that air passes through the volume;
  - e) an upstream portion within each of the second plurality of openings wherein each upstream portion has a first diameter and a first length; and
  - f) a downstream portion within each of the second plurality of openings wherein each downstream portion has a second diameter and a second length and wherein the first diameter is different the second diameter and the first length is different than the second length.

2. (previously presented) The resonator of claim 1 wherein each of the second plurality of openings is comprised of a cylindrical hole through the second member, each hole having a counter-bore forming the upstream portion wherein the first diameter is greater than the second diameter.

3. (previously presented) The resonator of claim 1 further comprising:
  - a) a predetermined thickness for the second member; and
  - b) a predetermined lower limit for the second length wherein the first length is formed so that the predetermined lower limit is not exceeded.

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4. (currently amended) The resonator of claim 3 wherein the predetermined thickness is greater than 0.10 inches.
5. (previously presented) The resonator of claim 4 wherein the first diameter is between about 0.150 inches and 0.250 inches.
6. (currently amended) The resonator of claim 5 wherein the first length is ~~grater~~ greater than 0.040 inches.
7. (currently amended) The resonator of claim 1 further comprising:
  - a) the first plurality of openings forming a first pattern such that a surface area of the first member between any two of the first plurality of openings is maximized by spacing the openings at a largest distance apart from each other in the first pattern; and
  - b) the second plurality of openings forming a second pattern such that a surface area of the second member between any two of the second plurality of openings is maximized by spacing the openings at a largest distance apart from each other in the second pattern.
8. (previously presented) The resonator of claim 1 wherein the upstream portion comprises a counter-bore.
9. (previously presented) The resonator of claim 1 wherein the system comprises a gas turbine combustor.
10. (withdrawn)
11. (withdrawn)
12. (withdrawn)
13. (withdrawn)
14. (withdrawn)

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15. (withdrawn)
16. (withdrawn)
17. (canceled)
18. (currently amended) ~~The A combustor system of claim further comprising:~~
  - a) a flow path through a combustor along which a gas passes from upstream toward downstream;
  - b) a resonator having a first member and a second member in generally spaced relation to each other and being in fluid connection with the flow path, the first member and second member defining a volume therebetween;
  - c) a first plurality of openings in the first member;
  - d) a second plurality of openings in the second member formed to establish a first acoustic inertance that is less than a second acoustic inertance that would be established if the second plurality of openings was formed of cylindrical holes through the second member;
  - e) an upstream portion having a first diameter and a first length within each of the second plurality of openings;
  - f) a downstream portion having a second diameter and a second length within each of the second plurality of openings;
  - g) the second diameter selected to limit a rate of mass flow of air passing through the resonator; and
  - h) the first diameter selected to be greater than the second diameter to achieve a predetermined acoustic inertance.
19. (previously presented) The combustor system of claim 18 further comprising:
  - a) a predetermined thickness for the second member;
  - b) a predetermined lower limit for the second length wherein the upstream portion comprises a counter-bore forming the first length so that the predetermined lower limit is not exceeded.

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20. (previously presented) The combustor system of claim 19 wherein the combustor system is part of a gas turbine.

21. (currently amended) The combustor system of claim ~~17~~18 further comprising:

- a) an upstream portion having a first diameter and a first length within each of the second plurality of openings;
- b) a downstream portion having a second diameter and a second length within each of the second plurality of openings;
- c) a predetermined thickness for the second member;
- d) a predetermined lower limit for the second length wherein the upstream portion comprises a counter-bore forming the first length wherein the first diameter is greater than the second diameter and the predetermined lower limit is not exceeded.

22. (withdrawn)

23. (withdrawn)

24. (withdrawn)

25. (new) A resonator for damping pressure waves supported by acoustic energy in a system having a flow path, the resonator comprising:

- a) a first member;
- b) a first plurality of openings through the first member;
- c) a second member maintained in a generally spaced relation to the first member wherein a volume is defined between the first member and the second member and the first member is situated upstream of the second member within the flow path;
- d) a second plurality of openings through the second member, the first plurality and the second plurality of openings being in fluid communication with the flow path so that air passes through the volume;
- e) an upstream portion within each of the second plurality of openings wherein each upstream portion has a first diameter and a first length; and

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f) a downstream portion within each of the second plurality of openings wherein each downstream portion has a second diameter and a second length, wherein the upstream portion comprises a counter-bore.

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